



Commission SMF Phase 1 Spectrum Release

Consultation Document

Consultation

Publication date: [03 August 2018]

Closing date for responses: [10 September
2018]

Reference Number: 01/2018

About this document¹

In January 2018, the Telecommunications Regulatory Commission of the Virgin Islands (“Commission”) published the Virgin Islands Spectrum Management Framework 2018 (“SMF 2018”) on its website (www.trc.vg).² This set out the Commission’s latest position on spectrum management in the Virgin Islands, covering matters such as spectrum allocations, spectrum assignments, licensing requirements and associated fees, and interference management and enforcement. In developing the SMF 2018, the Commission had regard to its and the Government’s objectives to further develop the sector, to the benefit of consumers, businesses and citizens of the Virgin Islands. In particular, this includes promoting fair and sustainable competition in the sector as well as the development of new and innovative services and a higher quality of service, throughout the Virgin Islands.

The Commission also considered the devastating impact of Hurricanes Irma and Maria on the Virgin Islands, including the destruction of most communications network infrastructure across the Territory and the resulting need to restore these networks and services as quickly as possible to citizens, consumers and businesses across the Territory.

The SMF 2018 contains a set of actions for the Commission to take forward over the next three to five years to implement key policy objectives. One of the first critical actions will be the release of spectrum in 2018 to facilitate the restoration of fixed communications services and to facilitate the provisioning of new, high-quality communications services, by means of fixed wireless broadband (LTE TDD) technology.

The Commission has commenced its preparation for this spectrum release by developing the proposed design parameters and award format, as well as the terms and conditions of the spectrum release.

In this document, the Commission sets out, for consultation, its preliminary views on:

- Which spectrum will be released (i.e., the number and size of the spectrum lots offered within each band covered in this spectrum release);
- The proposed award process (i.e., how the spectrum will be awarded);
- The key financial and non-financial terms of the frequency authorisations; and
- An overview of the key implementation steps.

¹ Disclaimer: All references to frequency assignments, allocations or similar terms in this document should not be interpreted as granting and or confirming any legal right to the frequencies mentioned (and in most cases should be considered as simple references to the actual declared usage of spectrum), except where such a right is given in a formal frequency authorisation issued by the Commission.

² http://www.trc.vg/images/attachments/Consultations_2017/SMF%202018%20-%20Final%20Doc%20Post%20Consultation%20-%20050318%20-%20TRK%20%28004%29.pdf

This document builds on the Commission's initial, informal discussions with industry stakeholders, its assessment of the current market environment, the experience during previous spectrum awards in the Virgin Islands and international precedent.

The Commission now wishes to consult with interested parties on the spectrum to be released, its proposed award format, draft Invitation to Apply, the draft frequency authorisations and its proposed implementation plan for the spectrum release. Once the Commission has received and considered responses to this consultative process, it will finalise the award process and frequency authorisations, taking into account the stakeholder feedback received to this public consultation. This will be followed by the issuance of a formal invitation to submit applications and the launch of the award process.

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Instructions for submitting a response

The Commission invites comments on this consultation document from all interested parties. To facilitate this, the Commission has set out nine specific consultation questions on the proposed spectrum to be released and the proposed format of the spectrum release. Each respondent should include a completed cover sheet (set out on the next page) as part of its consultation response to the Commission.

Comments should be submitted by **10 September 2018** in line with the guidelines for conducting consultations set out in the Telecommunications Code (Part 1) (Public Consultations and Public Hearings) Guidelines, 2010. The Commission reserves the right not to consider any responses submitted after this date.

Preferably, responses to this document should be sent by email to consultations@trc.vg (indicating the subject): “*Consultation on the SMF Phase 1 Spectrum Release*”. Alternatively, the responses may be sent to the address (or the number) below:

Consultation on the SMF Phase 1 Spectrum Release – Telecommunications Regulatory Commission P.O. Box 4401 or 27 Fish Lock Road, 3rd Floor Road Town, Tortola, British Virgin Islands VG 1110.

Responses should include:

In the case of responses from corporate bodies (legal persons):

- the name of the company/institution/association/other organisation;
- the name of a principal contact person; and
- full contact details (physical address, postal address, telephone number, fax number and email address).

In the case of responses from individual (natural) persons:

- the name of the person; and
- full contact details (including email).

In the interest of transparency, the Commission will normally make all submissions received available to public, subject to the confidentiality of the information received. The Commission will evaluate requests for confidentiality according to relevant legal principles.

Respondents are required to clearly mark any information included in their submission, which they consider to be confidential, and provide reasons why that information should be treated as such. Where information claimed to be confidential is included in a submission, respondents are required to provide both a confidential and a non-confidential version of their submission. The Commission will determine whether

information claimed to be confidential is to be treated as such and, if so, will not publish that information. In respect of information that is determined to be non-confidential, the Commission may publish or refrain from publishing such information at its sole discretion.

Once the Commission has received and considered responses to this consultative process, it will issue a final Invitation to Apply for the spectrum to be released (including finalised frequency authorisations). This will be published on the Commission's website.

Cover sheet for response to a Commission consultation

BASIC DETAILS

Consultation title:
To (Commission
Contact):

Name of
respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below which part of your response you consider is confidential, giving your reasons why

Nothing	Name/contact details/job title
Whole response	Organisation
Part of the response	Details of Confidential Information

If you want part of your response, your name or your organisation not to be published, we can still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that the Commission can publish. However, in supplying this response, I understand that the Commission may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, the Commission can disregard any standard email text about not disclosing email contents and attachments.

The Commission seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)

Consultation questions

Please see below for a list of nine questions, which are stated throughout this consultation document. These are placed here so that you can know in advance what to expect through the document as you develop your considered responses.

1. Do you agree with the stated objectives of the Phase 1 Spectrum Release? If not, please explain which objectives should be eliminated or which further objectives should be considered and why.
2. Do you agree with the proposed number of spectrum lots and spectrum lot sizes to be made available in the Phase 1 Spectrum Release? If not, please explain which alternative spectrum lots (size or quantity) should be considered and why.

Do you agree with the proposal that no licensee can hold more than 100 MHz spectrum in the LTE TDD bands after the Phase 1 spectrum release. If not, please explain why this restriction is not appropriate.

3. Do you agree with the proposal to limit the spectrum release to existing unitary licence holders only? If not, please explain and justify what amendments you propose to this eligibility requirement.

Should the Commission offer three or four frequency authorisations in this spectrum release? Please explain and justify your stated preference.

In case only three frequency authorisations will be made available, should all existing unitary licence holders be allowed to apply or only the existing mobile network operators? Please explain and justify your response.

4. Do you agree with the proposed award format for the spectrum release? If not, please explain and justify what amendments you propose to the current award format.

Do you agree with the proposed approach to differentiating applications for the same spectrum lot? If not, please explain and justify what amendments you propose to the current approach.

5. Do you agree with the terms of the application and, in particular, the information that must be submitted as part of the application for the spectrum? If not, please explain and justify what amendments you propose to the information requirements.
6. Do you agree with the financial and non-financial terms and conditions for the use of the spectrum to be released? If not, please explain and justify what amendments you propose to the terms and conditions.

7. Do you agree with the proposed implementation plan for the spectrum release, including the proposed timing? If not, please explain and justify what amendments you propose to the current plan.

8. Do you agree with the terms of the draft Invitation to Apply? If not, please explain and justify what amendments you propose to the draft Invitation to Apply.

9. Do you agree with the terms of the draft Frequency Authorisation? If not, please explain and justify what amendments you propose to the draft Frequency Authorisation.

Glossary/Interpretations

In this document, unless the context otherwise requires, the listed abbreviations are to be read as having the meanings referenced below.

Abbreviations	Meaning
AWS	Advanced Wireless Services
BCP	Business Continuity Plan
BVI Cable	BVI Cable TV Ltd.
CCT	Caribbean Cellular Telephone Ltd.
Digicel	Digicel (BVI) Ltd.
DPRS	Disaster Preparedness and Response Strategy
FDD	Frequency Division Duplex
Flow	Cable & Wireless (BVI) Ltd.
FWA	Fixed Wireless Access
GSMA	GSM Association
LTE	Long Term Evolution (4G)
NDP	Network Deployment Plan
SMF 2018	Spectrum Management Framework 2018
TDD	Time Division Duplex
The Commission	The Telecommunications Regulatory Commission of the Virgin Islands
VDSL	Very high bit Digital Subscriber Line

Part A: Context and objectives of this spectrum release

The section details the Commission’s decision to release spectrum to facilitate fixed communications service restoration and the provisioning of new, high-quality Fixed Wireless Access (FWA)³ communications services, in line with the implementation plan set out in the SMF 2018.

1. Background

The SMF 2018 sets out, amongst others, a phased release of spectrum over the next few years. This is summarised in the table below.

Table 1: SMF 2018 spectrum release plan

Phase	Indicative timing	Bands to be released	Total spectrum available
Phase 1	2018	LTE TDD spectrum (2.3 GHz, 2.5 GHz, 3.4-3.6 GHz)	Up to 460 MHz
Phase 2	2020	FDD spectrum (AWS, 700 MHz, 850 MHz)	Up to 103 MHz
Phase 3	2021	TDD Spectrum (3.6 – 3.8 GHz)*	Up to 200 MHz*

** Due to the overlap in bands, the spectrum released in Phase 3 will partly depend on what spectrum is awarded in Phase 1*

Phase 1 of the spectrum release plan, foreseen for 2018, focuses on fixed wireless (TDD LTE) spectrum. This takes into account the devastating impact of Hurricanes Irma and Maria on the telecommunications infrastructure in the Virgin Islands, as well as supporting the improvement of fixed communications services across the Virgin Islands, so as to ensure that end-users have access to high-quality services.

The Commission considers that fixed wireless technology represents an efficient way of providing high-quality fixed communications services in the Virgin Islands. This is because:

- There are existing synergies in the core and radio access networks of mobile and fixed wireless broadband networks, which would allow existing mobile network operators in the Virgin Islands to deploy fixed wireless services quickly and efficiently.⁴

³ FWA is a wireless access application in which the location of the end-user termination and the network access point to be connected to the end user are fixed whereby wireless access has been defined by the ITU as end-user radio connection(s) to core networks, see Recommendation ITU-R F.1399.

⁴ For example, most LTE base stations (such as, see for example, Huawei’s distributed Base Station DBS 3900) handle multiple frequency bands (TDD 1.8GHz, 2.3 GHz, 2.6 GHz, 3.5 GHz, 3.7 GHz and FDD: 700MHz, 800MHz, 900MHz, 1.8GHz, 1.9 GHz, 2.1GHz/AWS)

- Fixed wireless (TDD LTE) broadband services offers high capacity and allows high speed broadband service to be provided to end-users, comparable to those delivered over Very high bit Digital Subscriber Line (VDSL) networks.
- Fixed wireless services would be delivered via dedicated capacity/links in the “last mile” to the end-users’ premise, allowing for more reliable quality of service than mobile services (which are depended on the actual traffic in the relevant cell site) and more akin to fixed services, but FWA networks are easier to roll out than fixed networks.

The particular bands the Commission has included in this Phase are set out in the following table. All three TDD-bands listed are very well suited for fixed wireless broadband services. Band 40 and 41 have an extensive ecosystem of devices whilst the eco-system of band 42 is growing.

Table 2: Spectrum to be made available in Phase 1

LTE band class	UL (MHz)	DL (MHz)	Total (MHz)	Remarks
41	2500 – 2690		160	30 MHz assigned to Caribbean Cellular Telephone Ltd (CCT) ⁵
40	2300 – 2400		100	
42	3400 – 3600		200	2x25 MHz ⁶ currently assigned to CCT for fixed links.

2. Objectives of this spectrum release

A key policy objective for the Commission is to facilitate access of high-quality communications services to all citizens, consumers and businesses across the Virgin Islands.

From its ongoing dialogue with the industry the Commission understands that whilst all three mobile service providers have fully restored their mobile networks, fixed networks (i.e., both Cable & Wireless (BVI) Ltd. (Flow) copper/fibre and BVI Cable TV Ltd. (BVI Cable) coaxial cable networks) are yet to be restored.

As such, the Commission sees merit in facilitating the restoration of fixed communications services and networks in a timely and efficient manner, by means of fixed wireless (LTE TDD) technology. By virtue of their licence obligations, all service providers are obliged to rebuild their networks and are required to make representations and warranties to the Commission on the full restoration of all networks as part of this spectrum release.⁷

⁵ 2572 – 2602 MHz

⁶ 3475 - 3500 MHz combined with 3575 – 3600 MHz

⁷ As stated further in Part C below, a condition to participate in the spectrum award the Commission intends to require all applicants to be in compliance or have agreed Undertakings with the Commission in areas of non-compliance.

The Commission also believes that infrastructure-based competition can deliver high-quality, reasonably priced communication services to consumers. Hence, this spectrum release aims to facilitate infrastructure-based competition in fixed communications services across the Territory by offering multiple frequency authorisations as part of the spectrum release.

Lastly, there have been ongoing concerns with respect to the quality of service experienced by end-users in the Virgin Islands. These were compounded in the aftermath of the 2017 hurricanes due to the high traffic volumes on the mobile networks and the reduced capacity on these networks during the network restoration. Given this, the Commission believes it is imperative that, as part of the spectrum release, measurable, minimum service level standards are set for the fixed wireless services to which the service providers must commit. Going forward, the Commission also intends to conduct quality of service audits for network operators to ensure these meet the minimum service and quality of service standards set out in all applicable frequency authorisations.

The above objectives have guided the Commission's design of the spectrum award process and preparation of the draft frequency authorisations.

Question 1: Do you agree with the stated objectives of the Phase 1 Spectrum Release? If not, please explain which objectives should be eliminated or which further objectives should be considered and why.

3. Structure of this document

The remainder of this document is structured as follows:

- Part B presents the legal and policy framework for spectrum allocations in the Virgin Islands.
- Part C sets out the proposed award format of the Phase 1 spectrum release.
- Part D provides an overview of the next steps in the implementation of the Phase 1 spectrum release.
- Part E contains the draft Invitation to Apply for the Phase 1 spectrum release.
- Part F contains the draft frequency authorisations for the spectrum to be released as part of Phase 1 spectrum release.

Part B: Legal and policy framework for spectrum allocation

This section sets out the legal and policy framework for managing and allocating spectrum in the Virgin Islands. This has been adhered to in designing the spectrum release.

1. Legal framework

The legal framework for spectrum policy and management is given in the Telecommunications Act, 2006 (“Act”). Under the Act the Minister of Communications and Works (“Minister”) is responsible for developing and reviewing telecommunications policies and international matters including international, regional and bilateral frequency co-ordination (section 4 of the Act). The Commission advises the Minister on policy matters (section 6(a) of the Act). The Commission makes recommendations to the Minister and implements a position statement and action plan.

The Commission has responsibility for managing the spectrum and determining applications for and monitoring and enforcing licences and frequency authorisations (section 6(e) and (f) of the Act).

The Commission is the awarding body that will grant frequency authorisations for spectrum. Any frequency authorisations will be granted according to section 19 of the Act, the Telecommunications Code (Part 5) (Granting Frequency Authorisations (Interim Procedure) Requirements, 2011, and the conditions described in this consultation document.

The Act refers to the objectives the Commission is to take into account in carrying out these functions. These objectives include:

- promoting the economic, orderly and efficient utilisation of frequencies (sections 34 (1), 36(c));
- ensuring fair competition among licensees (section 6 (d));
- taking into account the public interest (sections 21 (b), 23 (1) (b));
- giving priority to the needs of the Government of the VI in respect of national security (section 35 (2));
- taking into account applicable regional and international agreements, standards and arrangements, including ITU Treaties (sections 36 (d) and (e)).

Specific functions in respect of spectrum management the Commission is expected to undertake include:

- the allocation and reallocation of spectrum;
- the determination of frequency authorisations and the monitoring and enforcement of licence or authorisation conditions.

2. Policy objectives and functions

In March 2011, the Commission published its “*Spectrum Policy for the British Virgin Islands*”⁸. The Spectrum Policy derives from the objectives specified in the Act and forms part of the Telecommunications Policy. The overriding objective of this Policy is “*to create the circumstances for a fully effective and successful telecommunications sector in the BVI, delivering excellent value for money to users and maximising the contribution of the sector to the economy*”.⁹

The Policy provides a clear statement of objectives from which the SMF 2018 has been derived. These objectives are:

- to promote the economic and socially efficient use of radio spectrum, such that
 - the public interest is served; and
 - competition between licensees is promoted;
- to take into account requirements for spectrum in respect of national security;
- to comply with relevant regional and international agreements, standards and arrangements, including ITU Treaties.

The Commission is satisfied that these objectives continue to be relevant. It has, therefore, used these objectives to guide the design of the upcoming spectrum release.

Finally, in carrying out its spectrum management related functions, the Commission seeks to support relevant national telecommunications, broadcasting, transport and security policies. The Commission’s mission is to promote value, choice, innovation, quality and competitive pricing for consumers and businesses by promoting investment, effective competition, informed choice and the opportunity to have access to a wide range of telecommunications services. Spectrum releases have a role to play in achieving these objectives by providing a vital input to the delivery of low cost and ubiquitous communications services and to provide a back up to wired networks in case of natural disasters.

⁸ Available at:

[http://www.trc.vg/images/attachments/014_BVI%20Spectrum%20Policy%20document%2022%20March%2011%20\(Final\)%20\(2\).pdf](http://www.trc.vg/images/attachments/014_BVI%20Spectrum%20Policy%20document%2022%20March%2011%20(Final)%20(2).pdf)

⁹ Telecommunications Liberalisation in the Virgin Islands, 10 January 2007

Part C: Proposed award format of the planned spectrum release

This section describes the design parameters of the planned spectrum release, in terms of (i) what spectrum will be released (i.e., the number and size of the spectrum lots offered within each band covered in this spectrum release), (ii) the proposed format for the award process (i.e., how the spectrum will be awarded), and (iii) the key financial and non-financial terms of the frequency authorisations.

1. Spectrum to be awarded

As stated in Part A above, this spectrum release focuses on fixed wireless (TDD LTE) spectrum in bands 40, 41 and 42. In total, there is 460 MHz of unassigned spectrum available across these three bands. However, as detailed further below, the Commission is of the preliminary view to only release up to 360 MHz of the total spectrum available in these bands as part of this spectrum award. The remaining 100 MHz of spectrum in band 42 will be reserved for 5G and other future uses.

1.1 Spectrum lot size

As part of the SMF 2018 consultation responses, the mobile operators have stated a need for at least 100 MHz of contiguous (LTE TDD) spectrum in order to deliver high speed fixed wireless broadband services across the Territory.

The Commission concurs that this amount of spectrum would be adequate for providing high speed fixed wireless broadband services across the Virgin Islands over the proposed spectrum licence duration. As such, and taking into account existing holdings, the Commission intends to offer the spectrum lots set out in the table below.

Table 3: Spectrum lots to be made available in the spectrum release

Lot number	LTE band class	UL (MHz)	DL (MHz)	Total size
1	41	2500	2570	70 MHz
2	41	2600	2690	90 MHz
3	40	2300	2400	100 MHz
4	42	3400	3500	100 MHz

The Commission notes that given CCT's current spectrum holdings in band 41, spectrum lots of only 70 MHz and 90MHz of contiguous spectrum are available in this band (i.e., Lot 1 and Lot 2).

As shown in Table 3 above, there are up to four spectrum lots available across the three bands covered in this award process. Each applicant will only be permitted to acquire one spectrum lot. Any remaining spectrum will then be retained for a later

spectrum release. This is to allow the Commission to release further spectrum later on, taking into account the latest market and technological developments.

Further, given its existing holdings of 30 MHz in band 41, CCT will only be permitted to apply for Lot 1 (i.e. the 70 MHz lot), but not Lots 2, 3 or 4 (i.e. the 90 MHz and 100MHz lots). This is to ensure consistency with the Commission's spectrum management policy and to enable each applicant to obtain to 100 MHz of LTE-TDD spectrum in this award.¹⁰

Question 2: Do you agree with the proposed number of spectrum lots and spectrum lot sizes to be made available in the Phase 1 Spectrum Release? If not, please explain which alternative spectrum lots (size or quantity) should be considered and why.

Do you agree with the proposal that no licensee can hold more than 100 MHz spectrum in the LTE TDD bands after the Phase 1 spectrum release. If not, please explain why this restriction is not appropriate.

2. Proposed award format

A key objective of this spectrum release is to facilitate the restoration of enhanced fixed communications services across the Virgin Islands. The Commission is of the preliminary view that this can be best achieved by adopting a managed assignment process for this spectrum release. This represents a well-tested, simple and timely format, which is known to the service providers in the Virgin Islands. It further allows the Commission to set measurable, minimum service level standards to which the service providers must commit. This process will also facilitate competition in the market (i.e., by allowing licenced service providers to participate in the award process and ultimately, to offer fixed communications services). This could result in the deployment of competing end-to-end FWA networks across the Territory, to the benefit of consumers, businesses and citizens of the Virgin Islands. Indeed, if awarded a LTE TDD frequency authorisation, CCT, Digicel (BVI) Ltd. (Digicel) and Flow would also have the same overall service portfolio and network infrastructures, which could facilitate competition across all telecommunication services. This should provide longer term benefits to all end-users and the wider economy.

¹⁰ The SMF 2018 makes clear reference to spectrum caps being widely used (including in Virgin Islands) as a means of ensuring a competitive balance between operators. Whilst the spectrum caps in the SMF 2018 focus on sub-1GHz spectrum (i.e., where currently the spectrum holdings are most asymmetric in the Virgin Islands), the Commission stated that it would review and confirm its position on spectrum caps in relation to bands above 1 GHz as part of the process of designing any upcoming spectrum assignments.

2.1 Eligibility requirements

In line with the objectives of this spectrum release, stated in Part A above, the Commission is minded to offer at least three, but no more than four, frequency authorisations in this award process.

In particular, to facilitate a timely award process and subsequent deployment of the FWA networks and provisioning of FWA telecommunications services to end-users, this spectrum release is targeted at existing unitary licence holders only (i.e. it is a requirement to hold a unitary licence in order to participate in the award process).

Further, due to prevailing synergies in FWA and existing mobile network infrastructures, the existing mobile network operators should be in a position to provide the FWA communications services in a cost efficient manner. As such, there could be merits to only awarding up to three frequency authorisations in this award process. This could be achieved by either: (i) allowing all existing unitary licence holders to apply for the three frequency authorisations to be made available, with the Commission then determining the successful applicants based on pre-defined evaluation criteria; or (ii) limiting the award process to the three mobile network operators only.

Question 3: Do you agree with the proposal to limit the spectrum release to existing unitary licence holders only? If not, please explain and justify what amendments you propose to this eligibility requirement.

Should the Commission offer three or four frequency authorisations in this spectrum release? Please explain and justify your stated preference.

In case only three frequency authorisations will be made available, should all existing unitary licence holders be allowed to apply or only the existing mobile network operators? Please explain and justify your response.

As set out in section 2 of the draft Invitation to Apply, the award process is open to all persons who:

1. hold a valid licence granted by the Commission for the operation of a Telecommunications Network (Unitary Licence) in the VI; and
2. at the time of registration for the spectrum award are in material compliance with the Act, their Licences, the Regulations, the Telecommunications Code and any instructions issued by the Commission, including without limitation, the delivery of all financial information and the payment of all fees, levies or royalty

fees due to the Commission under their Licences or otherwise; OR have delivered legally binding Undertakings to the Commission at least two (2) working days prior to Registration, which have been (a) agreed and signed by the Commission at least two (2) working days prior to registration, (b) identify all areas of material non-compliance and provide a clear plan to address each area with deadlines which are consistent with the timetable for this award process, and (c) include incentives to ensure performance of their Undertakings; and

3. meet the qualification criteria listed in Section 6 of the Invitation to Apply.

Persons who do not comply with the requirements 1, 2 and 3 above will not be allowed to register or to participate in any aspect of the spectrum award. Applicants shall present a certificate in the form set out in Appendix B – Form F of the Invitation to Apply, certified by an authorised person to demonstrate compliance with requirements 2 and 3 above.

Further, please refer to rules 2.4 to 2.6 of the draft Invitation to Apply (Part E) for the ownership constraints applicable to all Applicants. In particular, no Applicant may have a material interest, as defined in rules 2.5 of the draft Invitation to Apply, in any other Applicant or affiliate of another applicant.

2.2 Application and award process

Given the above, the Commission proposes the following process for the upcoming spectrum release.

1. **Registration (see Section 4 and 5 of the draft Invitation to Apply).** Any licensed service providers wishing to participate in the award process is required to formally register its interest to participate in the award and to pay a commitment fee of USD 15,000, by cheque, to the Commission no later than **10 September 2018** (i.e. the closing date of this consultation period). This is to provide clarity as to the levels of interest in the spectrum lots to be released and to ensure that the final award process reflects these levels of interest. For the avoidance of doubt, a licensed service provider cannot participate in the award process unless it has registered its interest to the Commission and has paid the associated fee. This commitment fee is non-refundable. It will, however, be credited towards the annual licence fees payable in the first year of the licence term by successful applicants. To the extent that a person who is registered opts not to submit an application, the Commission may, in its discretion, return the commitment fee to that person.
2. As part of the formal, published **Invitation to Apply**, the Commission will set out the spectrum lots available as well as the financial and non-financial terms associated with acquiring rights to use the spectrum. As part of this, the Commission will present three, pre-defined minimum service level commitments and associated annual licence fees (see sub Section 3 below).

The formal Invitation to Apply will also set out the conditions that parties must meet in order to participate in the spectrum award.

3. When **submitting its application**, each applicant will be required to state its relative preference between the available spectrum lots. Each applicant will also select the minimum service level and associated annual licence fee it wishes to commit to. Each applicant will further be required to submit a performance bond and demonstrate compliance with any other requirements set out in the formal Invitation to Apply.
4. The Commission will then **review all applications** received and will award the spectrum to those applicants which have met all requirements as set out in the formal Invitation to Apply.
 - a. Spectrum lots will be awarded based upon the stated preference of all applicants who submit a compliant application.
 - b. In case more than one applicant has submitted the same stated preference, the relevant spectrum lot will be awarded to the applicant with the highest minimum service level commitment.
 - c. In case more than one applicant has submitted the same stated preference and the same minimum service level commitment, the relevant spectrum lot will be awarded to the applicant with the highest ranked Network Deployment Plans (NDP), as determined by the Commission.

Question 4: Do you agree with the proposed award format for the spectrum release? If not, please explain and justify what amendments you propose to the current award format.

Do you agree with the proposed approach to differentiating applications for the same spectrum lot? If not, please explain and justify what amendments you propose to the current approach.

2.3 Application requirements

As stated above, each applicant must provide a range of documentation to the Commission when submitting its application. This includes the following.

1. A **performance bond** in line with the requirements set out in rule 6.3 of the Invitation to Apply.
2. A **NDP** providing a tabular overview of all cell sites and configuration/characteristics of the antennas used to provide the FWA telecommunications services. Separate tables need to be provided for each network deployment milestone (i.e. 6 months, 12 months and 24 months). A template for the NDP, in line with the NDP contained in the 2016 mobile

frequency authorisations, is set out in Schedule C of the draft Frequency Authorisation (see Part E below).

3. A **Disaster Preparedness and Response Strategy (DPRS) and Business Continuity Plan (BCP)** detailing how the licensee will continue its operation in case of a (natural) disaster. The DPRS and BCP have to contain at least the content as described by the GSM Association (GSMA)¹¹. See also rule 6.3 iv of the draft Invitation to Apply.
4. A **compliance certificate**, in line with the requirements set out in rule 6.3 and Form F in Appendix B of the Invitation to Apply, including a set of pre-agreed **Undertakings** between the applicant and the Commission.
5. A **signed declaration** confirming acceptance of the terms of the frequency authorisation, as set out in Form D in Appendix B of the Invitation to Apply.

Question 5: Do you agree with the terms of the application and, in particular, the information that must be submitted as part of the application for the spectrum? If not, please explain and justify what amendments you propose to the information requirements.

3. Terms and conditions for the use of the spectrum

Below the Commission provides an overview of the main financial and non-financial terms for the use of the spectrum to be assigned. Further details on all terms and conditions can be found in the draft frequency authorisations (see Part E below).

3.1 Service scope

As stated above, the primary objective of this spectrum release is to facilitate and improve the provision of fixed communications service across the Virgin Islands. As such, the use of the assigned frequency bands will be for the delivery of FWA LTE-TDD telecommunications services. These include broadband, television and voice services.

For the avoidance of doubt, the use of the assigned frequency bands to provide mobile telecommunications services will not be permitted. In particular, whilst the hurricanes have severely damaged the existing mobile network infrastructure, no incremental

¹¹ For the typical content of a DPRS and BCP, reference is made to the following documents of the GSMA:
<https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/01/Designing-an-Effective-Disaster-Preparedness-Response-Programme.pdf>
https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/05/GSMA_Disaster-Response_Business_Continuity_Management_Report.pdf
<https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/Mobile-Industry-Impact-and-Response-in-the-Caribbean.pdf> .

spectrum was needed to restore these services and, these have now been restored. However, by expediting the release of the additional spectrum under consideration, this may create further, indirect benefits for the provision of mobile services. This is due to the existing synergies in the core and radio access networks of both mobile and FWA networks.¹²

The Commission recognises that the FWA LTE-TDD bands could also be used for mobile services. As such, it may consider in future, whether the frequency authorisations will be amended to allow for an alternative use, as the Commission recognises that, in general, spectrum licences should be technology neutral. This is also reflected in section 2.8.1 of the draft frequency authorisation, which allows for amendment of the licence terms and conditions during the licence term, subject to the written agreement of both the Commission and relevant licenced service provider. This would, for example, allow the frequency authorisation to be amended to take into account any developments in the field of FWA or mobile technology. However, in such cases the Commission reserves the right to change other terms and conditions of the authorisations as well, to reflect the shift to technologically neutral authorisations. This includes, for the avoidance of doubt, the level of any fees applicable to the licence.

3.2 Licence duration

The frequency authorisations will allow for the utilisation of the assigned spectrum lot for 15 years, provided that the frequency authorisation holder continues to hold a unitary licence.¹³ This is in line with the frequency authorisations for mobile spectrum issued by the Commission in 2016. It is also in line with international precedent. The Commission considers the 15 year licence duration represents an adequate period to allow the licence holder to earn a reasonable return on investment efficiently incurred, whilst also ensuring that valuable spectrum is not “tied up” in sub-optimal allocations and assignments over a prolonged period of time.

3.3 Minimum service level requirements

Schedule B of the draft frequency authorisation sets out the minimum service level requirements. These are provided to ensure that end-users benefit from the spectrum released through being able to access enhanced service offerings, consistent with the capabilities of the FWA LTE-TDD technologies.

The focus of these requirements is on the authorisation holder providing a minimum entry-level package of FWA telecommunications services to every premise on the main islands (i.e., Tortola, Anegada, Jost Van Dyke and Virgin Gorda) within five

¹² Most LTE base stations (such as, see for example, Huawei’s distributed Base Station DBS 3900) handle multiple frequency bands (TDD: 1.8GHz, 2.3 GHz, 2.6 GHz, 3.5 GHz, 3.7 GHz and FDD: 700MHz, 800MHz, 900MHz, 1.8GHz, 1.9 GHz, 2.1GHz/AWS)

¹³ All unitary licences expire in 2022. The relevant frequency authorisation will expire at the same time if the relevant unitary licence is not renewed.

working days of receiving a request from the end-user. The Commission considers it adequate to focus on an entry-level package only, as it expects the competition in the retail market to deliver enhanced packages to all remaining customer segments.

This entry-level package is defined around the minimum guaranteed (download and upload) speeds¹⁴, a monthly data allowance, and monthly retail price at which the package needs to be offered. The minimum speed and data allowances are informed by international precedence and the Commission’s understanding of the technical capabilities of the FWA LTE-TDD technologies. Further, in recognition of the need to deploy and optimise the FWA networks and services, the minimum requirements of this package will increase over time (i.e. after 6, 12 and 18 months of the frequency authorisations being issued). The monthly subscription price is informed by monthly subscription price for entry-level residential fixed broadband service in the Virgin Islands and a high-level benchmark of fixed wireless broadband services across the region.¹⁵ This is to ensure that end-users have the opportunity to access FWA broadband services at a similar price to fixed broadband services, but at higher (guaranteed) minimum speeds and download speeds, in line with potential demand going forward.

Further, in participating in the award, each applicant can choose between three pre-defined entry-level package options. Applicants willing to commit to higher minimum service commitments (i.e., Option 2 or Option 3) will receive a discount on the annual licence fee if these commitments are met (see section 3.5 below) and greater consideration if more than one applicant has submitted the same stated preference on the spectrum lots (see section 2.2 above).

The characteristics of the three proposed minimum service level commitments available to licensees are set out in the tables below.

Table 4: Minimum service level requirements – Option 1

Time after issuance of frequency authorisation	Entry-level package			
	Minimum speed		Monthly data allowance	Monthly price
	Download	Upload		
6 months	10 Mbps	3 Mbps	150 GB	USD 90 or less
12 months	15 Mbps	5 Mbps	200 GB	USD 90 or less
18 months	25 Mbps	8 Mbps	250 GB	USD 90 or less

¹⁴ Note, the minimum speed requirements for FWA telecommunications services are guaranteed speeds, rather than “best effort” speed requirements applied to mobile communications services.

¹⁵ The Commission has reviewed the monthly subscription prices for residential fixed wireless broadband packages offered by Digicel (Barbados), Logic (Cayman), Wind (Dominican Republic) and TSTT in Trinidad and Tobago. All but one of these packages are available at a monthly price of less than USD 90.

Table 5: Minimum service level requirements – Option 2

Time after issuance of frequency authorisation	Entry-level package			
	Minimum speed		Monthly data allowance	Monthly price
	Download	Upload		
6 months	20 Mbps	6 Mbps	200 GB	USD 90 or less
12 months	25 Mbps	8 Mbps	250 GB	USD 90 or less
18 months	40 Mbps	13 Mbps	300 GB	USD 90 or less

Table 6: Minimum service level requirements – Option 3

Time after issuance of frequency authorisation	Entry-level package			
	Minimum speed		Monthly data allowance	Monthly price
	Download	Upload		
6 months	30 Mbps	10 Mbps	250 GB	USD 90 or less
12 months	35 Mbps	11 Mbps	300 GB	USD 90 or less
18 months	50 Mbps	16 Mbps	350 GB	USD 90 or less

Other quality of service obligations

Further to the minimum service level requirements above, the frequency authorisation will also contain a set of general quality of service (QoS) obligations, summarised in the table below. These obligations are in line with those contained in the unitary licence and/or 2016 mobile spectrum frequency.

Table 7: General quality of service requirements

QoS indicator	Requirement
Latency	A maximum round-trip latency of 100 milliseconds
Package loss	A maximum average package loss of 3%
Fault Recovery rate	A Fault Recovery Rate, as defined in the unitary licence, of: <ul style="list-style-type: none"> ▪ 90% within 24 hours and of ▪ 95% within 72 hours for every day of the year during the term of the Frequency Authorisation.

3.4 Performance guarantees

In addition to setting clear and measurable minimum quality of service commitments, the Commission recognises it is important to also put into place a clear and enforceable set of performance guarantees.

The Commission proposes to adopt a two-phase approach to setting these performance guarantees over the licence duration. This is detailed below.

Performance guarantees within initial 18 months

As stated in section 2.2 above, each applicant will be required to submit, as part of its application, a performance bond, in the form of a bank guarantee or letter of credit, to the Commission. This is a common requirement in spectrum awards, and aims to provide financial guarantees that the licensee will meet all roll-out and service level requirements set out in the authorisation. Assuming the service provider complies with all of these requirements, the performance bond will be released once the last roll-out or minimum service level requirement milestone is met.

For this spectrum release, the Commission proposes to require a performance bond of USD 300,000.

In proposing the level of the performance bond, the Commission has taken into account the performance bonds required in the 2016 Spectrum Award and the likely investment requirements and expected returns from the FWA service. In particular, the Commission considers it is important that the level of the performance bond incentivises the licensees to meet their minimum service level commitments (rather than foregoing all or parts of the performance bond), whilst not unduly increasing the overall financial burden on them.

The release of the performance bond will then be linked to the three minimum service commitment milestones. In particular:

- **First quality of service audit.** This will be conducted six months after issuing the frequency licence with the aim to measure compliance with the eight month minimum service commitments. In case of full compliance by the relevant service provider, 25% of the value of its total performance bond will be released.
- **Second quality of service audit.** This will be conducted 12 months after issuing the frequency licence with the aim to measure compliance with the 12 month minimum service commitments. In case of full compliance by the relevant service provider, 35% of the value of its total performance bond will be released.
- **Third quality of service audit.** This will be conducted 18 months after issuing the frequency licence with the aim to measure compliance with the 18 months minimum service commitments. In case of full compliance by the relevant service provider, 40% of the value of its total performance bond will be released.

With the exception of fault recovery rates, each quality of service audit will be conducted based upon probes placed at end-users' premises. This will require each licensee to provide information on its FWA service customers to the Commission on a regular basis, as set out in section 2.4.1 of the draft frequency authorisation. The Commission will then contact a number of these customers to install the probes at

their premises for the time of the QoS measurements. The number of customers will be determined on a randomised basis, ensuring a representative sample size overall and across each part of the Territory.

In the event that a service provider does not fulfil one or more of the QoS requirements, the Commission will draw down part of the performance bond value, in line with the schedule set out in the table below. Further details on the exact repayment regime of the performance bond is set out in Schedule D of the draft authorisations (see Part E below).

Table 8: Proposed draw on performance bond in case of non-compliance

QoS parameter	Requirement	Target level	Share of total performance bond to be drawn on
First quality of service audit (6 months milestone)			
Entry-level package download / upload speed	As per chosen Option 1-3	> 95% of measurements	13.75%
Latency	<100 millisec	> 95% of measurements	6.25%
Average packet loss	< 3%	> 95% of measurements	2.50%
Fault recovery rate 24 hours	90%	> 90% of failures	1.25%
Fault recovery rate 72 hours	95%	> 95% of failures	1.25%
Second quality of service audit (12 months milestone)			
Entry-level package download / upload speed	As per chosen Option 1-3	> 95% of measurements	19.25%
Latency	<100 millisec	> 95% of measurements	8.75%
Average packet loss	< 3%	> 95% of measurements	3.50%
Fault recovery rate 24 hours	90%	> 90% of failures	1.75%
Fault recovery rate 72 hours	95%	> 95% of failures	1.75%
Third quality of service audit 18 months milestone)			
Entry-level package download / upload speed	As per chosen Option 1-3	> 95% of measurements	22.00%
Latency	<100 millisec	> 95% of measurements	10.00%
Average packet loss	< 3%	> 95% of measurements	4.00%
Fault recovery rate 24 hours	90%	> 90% of failures	2.00%
Fault recovery rate 72 hours	95%	> 95% of failures	2.00%

Performance guarantees after initial 18 months

The Commission will continue, after the initial 18 month period, to conduct reviews/audits of the quality of service offered by each frequency authorisation holder, as set out above. These will be undertaken on a quarterly basis.

In case these reviews/audits result in the relevant service provider not meeting any of its quality of service requirements, the Commission will impose penalties based upon the penalty regime set out in the table below.

Table 9: Proposed quality of service penalties

QoS parameter	Requirement	Target level	Penalty
Entry-level package download / upload speed	As per chosen Option 1-3	> 95% of measurements	USD 4,000 for each percentage point below the target level
Latency	<100 millisecs	> 95% of measurements	USD 1,000 for each percentage point below the target level
Average packet loss	< 3%	> 95% of measurements	USD 1,000 for each percentage point below the target level
Fault recovery rate 24 hours	90%	> 90% of failures	USD 1,000 for each percentage point below the target level
Fault recovery rate 72 hours	95%	> 95% of failures	USD 1,000 for each percentage point below the target level

3.5 Annual licence fees

In line with spectrum pricing principles set out in the SMF 2018 and the 2016 mobile frequency authorisations, there will be an annual licence fee payable throughout the duration of the authorisation.¹⁶ The fee, proposed at USD 750 to 1,500 per MHz, reflects the Commission's cost of awarding and managing the released spectrum.¹⁷ When determining the level of the annual licence fee, the Commission has further taken into consideration the annual licence fees contained in the 2016 mobile frequency authorisations (i.e. USD 1,400 per MHz) and the incremental earning potential for the licensees from providing FWA telecommunication services over the overall licence duration.

Given the differences in size of the spectrum lots made available in this award process, the annual licence fee will again be based on a per MHz charge, which will be multiplied by the total size (in MHz) of each lot to derive the total fee applicable to each authorisation.

¹⁶ There is a general need to ensure spectrum is used efficiently and to the benefit of society. Charging users for spectrum allocated to them can incentivise an efficient use of spectrum, by taking into account the opportunity cost to society of the spectrum. Given this, spectrum charges overall should: (i) cover the costs of the spectrum management activity borne by the spectrum management authority or regulators; (ii) ensure the efficient use of spectrum resources; and (iii) maximise the economic benefits to the country from use of the spectrum resource. Annual licences fees commonly aim to achieve the first objective above, with spectrum pricing addressing the remaining two points for high value spectrum only (i.e. where demand exceeds supply).

¹⁷ This includes, amongst others, the Commission's estimates of the cost associated with internal and external support of conducting the award process. It further covers, the estimated costs of conducting the quarterly quality of services reviews over the 15-year term of the frequency authorisation.

The Commission sees merits in offering a scaling fee structure for the different minimum service commitment options discussed in section 3.3 above. In particular, applicants committing to higher minimum service commitments will receive a discount on the per MHz charge for Option 1 (i.e., 25% discount for Option 2 and 50% discount for Option 3). For the avoidance of doubt, any discount on the annual licence fee will be applied retrospectively (i.e. after receiving evidence that the licensed service provider has delivered on its minimum service level and QoS commitments in that year).

The table below sets out the proposed annual licence fees for each of the three minimum service commitment options. As stated in section 2.2 above, the annual licence fees payable in the first year of the licence term will be adjusted to reflect the commitment fee paid prior to the award process.

Table 10: Proposed annual licence fees (USD) for each spectrum lot

Lot number	Total size	Annual licence fee		
		Minimum service commitment Option 1	Minimum service commitment Option 2	Minimum service commitment Option 3
1	70 MHz	USD 105,000	USD 78,750	USD 52,500
2	90 MHz	USD 135,000	USD 101,250	USD 67,500
3	100 MHz	USD 150,000	USD 112,500	USD 75,000
4	100 MHz	USD 150,000	USD 112,500	USD 75,000

3.6 Other requirements

Further to the above, the draft frequency authorisation contains the following additional requirements on all licensees.

- **Requirement to furnish information.** Article 2.4 of the draft frequency authorisation sets out the information, which the licensee needs to provide to the Commission on a regular basis. This represents an enhanced set of information, compared to that set out in the 2016 mobile frequency authorisation, taking into account the information needs for the regular quality of service audits to be conducted by the Commission (see section 3.4 above).
- **Requirement to build hurricane proof sites.** Article 3.2.1.c of the draft frequency authorisation sets out that all FWA sites have to be designed, constructed and maintained in such a way that they either can withstand a hurricane of Category 5, as defined by the Saffir–Simpson hurricane wind scale (SSHWS) or be restored expeditiously, and in any event, no later than no later than five calendar days after any hurricane has passed the Territory.

- **Ownership constraints.** Rules 2.4 to 2.6 of the draft Invitation to Apply set out ownership constraints applicable to all Applicants. In particular, no Applicant may have a material interest in any other Applicant or affiliate of another applicant. An Applicant has a “Material Interest” in another Applicant where either the Applicant or any of its Affiliates:
 - directly or indirectly holds or will hold ten per cent (10%) or more shares in the other Applicant; or
 - may, by refusing their consent or acquiescence, prevent ten per cent (10%) or more of the votes entitled to be cast at a general meeting of the other Applicant from being cast; or
 - directly or indirectly holds or will hold any shares in the other Applicant and has or will have the ability to appoint or remove one or more directors of the Applicant; or
 - may by rights, contracts or any other means, having regard to the considerations of fact or law involved, exercise decisive influence on the Applicant, in particular by ownership or the right to use all or part of the assets of any Applicant or any of its Affiliates, or rights or contracts which confer decisive influence on the composition, voting or decisions of the organs of an undertaking.

Affiliate, in relation to a given Applicant is any person directly or indirectly controlling, controlled by or under common control with the Applicant where either the Applicant or that person owns, directly or indirectly at least fifty per cent (50%) or more of the share capital, voting rights, securities, partnership or other ownership of interest in the other person or in the Applicant as the case may be.

- **Future laws and regulations.** The authorisation holders shall comply with all relevant laws and regulation that may come into effect in the Virgin Islands in relation to disaster management or otherwise.

Question 6: Do you agree with the financial and non-financial terms and conditions for the use of the spectrum to be released? If not, please explain and justify what amendments you propose to the terms and conditions.

Part D: Implementation steps

In this section, the Commission sets out the stages of the planned spectrum release and provides indicative timings for. Please note that this implementation plan remains indicative only. The Commission will continue to review the plan and revise the activities and/or their sequencing to respond to market developments prior or during the award process.

- 1. Registration of interest (15:30 on 10 September 2018 - i.e., the closing date of the public consultation period).** Licensed service providers wishing to participate in the award process must register their interest to participate in the award and pay a commitment fee of USD 15,000 to the Commission.
- 2. Publication of final Invitation to Apply (Three weeks after the end of the consultation period).** The Commission will finalise the award process design, form of Invitation to Apply, and the frequency authorisation template, taking into account the stakeholder feedback received in response to this public consultation. A formal Invitation to Apply will then be made available to all eligible licenced operators and published on the Commission's website. This will set out:
 - a. the information an applicant must submit as part of its application (including submission and declaration templates, where applicable).
 - b. the deadline for applications and details on the submission process
 - c. the final frequency authorisation template.
- 3. Clarification questions and responses.** Applicants can submit to the Commission in writing clarification questions on the final Invitation to Apply up to two weeks after the final Invitation to Apply has been issued. The Commission will respond to these questions within one week after the deadline for received questions.
- 4. Licensees submit application (Three weeks after the deadline for responses to clarification questions).** Applicants need to submit their application and supporting documentation (see rules 5.12 to 5.17 of the draft Invitation to Apply) to the Commission in line with the requirements set out in the final Invitation to Apply.
- 5. Review of all applications and issuance of frequency authorisations (five weeks after the submission deadline for applications).** The review process will follow the steps set out in the final Invitation to Apply document. Where required, the Commission may seek clarification from individual applicants on the submitted information. Once all clarifications are received, the Commission will evaluate each application on its merits and will issue frequency authorisations to all successful applicants, subject to them having met all requirements set out in the final Invitation to Apply (such as, submitting a performance bond and having issued a compliance certificate). Successful

applicants will be notified within three weeks after the deadline of submitting applications, with the frequency authorisations being granted two weeks later.

- 6. Publication of the outcome of the award process.** Once the spectrum award is completed, the Commission will publish the outcome (in terms of the frequency authorisations granted) on its website.

Question 7: Do you agree with the proposed implementation plan for the spectrum release, including the proposed timing? If not, please explain and justify what amendments you propose to the current plan.

Part E: Draft Invitation to Apply

[See draft ITA]

Question 8: Do you agree with the terms of the draft Invitation to Apply. If not, please explain and justify what amendments you propose to the draft Invitation to Apply.

Part F: Draft Frequency Authorisations

[See Draft Frequency Authorisation]

Question 9: Do you agree with the terms of the draft Frequency Authorisation? If not, please explain and justify what amendments you propose to the draft Frequency Authorisation.